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Amendments to the claims:

Please amend the claims as follows:

1.(currently amended) A method of polarization birefringence compensation in a photonic device with a slab waveguide having a core, comprising:

forming in said slab waveguide a compensator region to minimize the wavelength shift between different polarizations, said compensator region having a different birefringence from a remaining portion of said slab waveguide outside said compensator region; and

providing a capping layer having a higher refractive index than said core on said compensator region to increase the birefringence contrast between said compensator region and said remaining portion of said ~~planar~~ slab waveguide.

2.(original) A method as claimed as claimed in claim 1, wherein said compensator region is a region of reduced thickness in said slab waveguide.

3.(original) A method as claimed in claim 2, wherein said region of reduced thickness is etched into said slab waveguide.

4.(original) A method as claimed in claim 2, wherein said compensation region is in the form of a prism.

5.(original) A method as claimed in claim 1, wherein said capping layer is silicon nitride.

6.(original) A method as claimed in claim 1, wherein said capping layer is silicon oxynitride.

7.(currently amended) A method as claimed in claim 2, wherein ~~said slab waveguide has~~ a cladding layer is provided over said core, and said region of reduced thickness is formed in said cladding layer to provide ~~an overcladding~~ residual spacer layer ~~of cladding material is retained~~ over said core in said compensator region, and said capping layer is ~~formed~~ provided on said ~~overcladding~~ spacer layer.

8.(original) A method as claimed in claim 1, wherein said slab waveguide is made of glass.

9.(original) A method as claimed in claim 1, wherein the thickness of said capping layer is less than 130 nm.

10.(original) A method as claimed in claim 9, wherein the thickness of said capping layer lies in the range from about 60 nm to about 130 nm.

11.(currently amended) A method as claimed in claim 1, further comprising forming an additional ~~lower refractive index~~ layer having a lower refractive index than said capping layer ~~to~~ overly said capping layer ~~to~~ to reduce the sensitivity of the compensator to variations in deposited layer thicknesses.

12.(currently amended) A method as claimed in claim 11, wherein said additional ~~lower refractive index~~ layer is SiO_2.

13.(currently amended) A method as claimed in claim 11, wherein the thickness of said ~~lower refractive index~~additional layer is adjusted to polarization dispersion within target specifications.

14.(currently amended) A photonic device with polarization birefringence compensation, comprising:

a slab waveguide having a core;

a birefringence compensator formed in said slab waveguide to minimize wavelength shift between different polarizations, said compensator birefringence having a different birefringence from a remaining portion of said slab waveguide; and

a capping layer on said birefringence compensator to increase the birefringence contrast between said compensator region ~~and~~ and said remaining portion of said ~~planar~~ slab waveguide, said capping layer having a refractive index higher than said core.

15.(original) A photonic device as claimed in claim 14, wherein said compensator is a region of reduced thickness in said slab waveguide.

16.(original) A photonic device as claimed in claim 15, wherein said region of reduced thickness is etched in said slab waveguide

17.(original) A photonic device as claimed in claim 15, wherein said compensator is in the form of a prism.

18.(original) A photonic device as claimed in claim 14, wherein said capping layer is silicon nitride.

19.(original) A photonic device as claimed in claim 14, wherein said capping layer is silicon oxynitride.

20.(currently amended) A photonic device as claimed in claim 15, wherein said slab waveguide has a cladding layer over said core, and said region of reduced thickness is provided in said cladding layer such that a spacer ~~n overcladding~~ layer ~~of cladding material~~ of the same material as said cladding layer is ~~retained~~ provided over said core in said compensator region, and said capping layer is formed on said ~~overcladding~~ spacer layer.

21.(original) A photonic device as claimed in claim 15, wherein said slab waveguide is made of glass.

22.(original) A photonic device as claimed in claim 14, wherein the thickness of said capping layer is less than 130 nm.

23.(original) A photonic device as claimed in claim 14, wherein the thickness of said capping layer lies in the range from about 60 nm to about 130 nm.

24.(original) A photonic device as claimed in claim 14, wherein said photonic device is an arrayed waveguide grating demultiplexer.

25.(original) A photonic device as claimed in claim 14, wherein said photonic device is an echelle grating demultiplexer.

26.(currently amended) A photonic device as claimed in claim 14, further comprising a an additional ~~lower refractive index~~ layer having a lower refractive index than said capping layer and overlying said capping layer to reduce the sensitivity of the compensator to variations in the thicknesses of the deposited layers.

27.(currently amended) A photonic device as claimed in claim 26, wherein said additional ~~lower refractive index~~ layer is SiO_2.

28.(currently amended) A photonic device with polarization birefringence compensation, comprising:

a slab waveguide having a core;

a region of reduced thickness in said slab waveguide forming a birefringence compensator to minimize wavelength shift between different polarizations, said birefringence compensator having a different birefringence from a remaining portion of said slab waveguide; and

a capping layer on said compensator to increase the birefringence contrast between said compensator region and said remaining portion of said ~~planar~~ slab

waveguide, said capping layer having a refractive index higher than said core and being selected from the group consisting of silicon nitride and silicon oxynitride.

29.(original) A photonic device as claimed in claim 28, wherein said region of reduced thickness is etched in said slab waveguide.

30.(original) A photonic device as claimed in claim 28, wherein said capping layer is less than 130 nm thick.

31.(currently amended) A photonic device as claimed in claim 28, further comprising an ~~overcladding~~ spacer layer between said core and said capping layer in said compensator region.

32.(original) A photonic device as claimed in claim 28, wherein the thickness of said capping layer lies in the range from about 60 nm to about 130 nm.

33.(currently amended) A photonic device as claimed in claim 28, further comprising ~~a~~ an additional ~~lower refractive index~~ layer having a lower refractive index than said capping layer and overlying said capping layer to reduce the sensitivity of the compensator to variations in the thicknesses of the deposited layers.

34.(original) A photonic device as claimed in claim 33, wherein said additional lower refractive index layer is SiO_2.